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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/931,458	08/16/2001	Nicholas Paul Cowley	534334-011	2970

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EXAMINER

JONES III, CLYDE H

ART UNIT PAPER NUMBER

2623

DATE MAILED: 05/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/931,458	<b>Applicant(s)</b> COWLEY ET AL.	
	<b>Examiner</b> Clyde H. Jones III	<b>Art Unit</b> 2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 2/6/2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>2/6/2006</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments with respect to claim 1-14 have been considered but are moot in view of the new ground(s) of rejection.

In response to applicant's arguments on pages 5-7 of the 2/6/2006 Remarks, the newly added limitations continue to be met by the Rakib and Domino references as described below.

In response to applicant's arguments against the (Rakib and Domino) references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In response to applicant's argument that Rakib and Domino are nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Rakib and Domino deal with the problem of interference in received RF signals.

In response to applicant's argument that there is no suggestion to combine the (Rakib and Domino) references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the

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claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the Rakib and Domino references are attempting to solve noise problems in RF signal receivers and further both systems use thresholds generated from average values of the signal induced with noise. Furthermore suggestion/motivation to modify Rakib with the teachings of Domino is found in the Domino reference in the portions cited below and even further in the knowledge generally available to one of ordinary skill in the art.

In regards to applicant's argument that the Staudinger reference is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, the Staudinger reference clearly teaches/suggests a method of determining the amount of error/distortion in a signal using knowledge that is generally available to one of ordinary skill in the art.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 2, 3, 4, 7, 9, 11, 12, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rakib et al. (US 6,426,983 B1) in view of Domino et al. (US 6,259,752 B1).

Regarding claim 1, the following limitations read on Rakib in further view of Domino:

a tuner comprising an input section for converting a radio frequency signal to a sequence in time of amplitude samples (col. 4, lines 20-36; fig. 1 item 10; in which Rakib's receiver unit (RU) is a "tuner" for receiving cable TV network channels; col. 4, lines 34-38, 43-48 & ADC 16 – fig. 1 in which "a sequence in time of amplitude samples" reads on the ADC samples taken when converting the analog signal amplitudes to digital signals for further digital processing);

a threshold generator for generating a threshold as a first function of an average of amplitudes of a plurality of the amplitude samples (col. 5, lines 13-20 – in which fig. 1, employs fig. 2; col. 5, line 60-col.6, line 25; in which Rakib's detection and cancellation circuit – 36, fig. 2- generates an adaptable threshold based on the amplitude of the samples in their respective frequency bands);

a comparator for comparing the amplitude of each of the amplitude samples with the threshold (col. 6, lines 5-10; in which Rakib's detection and cancellation circuit 36 compares the amplitude of the samples to the threshold);

a corrector responsive to the comparator for setting to zero each of the amplitude samples whose amplitude is greater than the threshold (col. 5, lines 47-58; col. 5, line 67-col. 6, line 2; col. 7, lines 1-16 & fig. 3; in which Rakib's detection and cancellation circuit 36 sets frequency bins, i.e., the amplitude of frequency groups/bands generated by the filter bank with amplitudes above the threshold, to zero);

Rakib further discloses the average signal amplitude of a frequency bin containing an interference signal is higher than averages generated from **other** bins, which don't have an interfering signal (col. 7, lines 55-65) and that the threshold should exceed an acceptable variance of the amplitude (col. 7, lines 49-55).

However, Rakib fails to disclose excluding from the average any of the amplitude samples whose amplitude exceeds the threshold.

In an analogous art, Domino discloses a system in an RF receiver that discards extremely high amplitude interference, i.e., above a threshold, signals from a running average of signal values, so that the erroneous signal does not abruptly change the running average (col. 7, lines 9-21).

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify Rakib's system to include excluding from the average any of the amplitude samples whose amplitude exceeds the threshold as taught by Domino, so that a better running average of signal amplitudes could be used to generate the threshold, i.e., the running average would not be corrupted by extremely high interference signals (Domino – col. 7, lines 15-16; Rakib – col. 7, lines 53-55).

Furthermore, one of ordinary skill in the art would have know that eliminating

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unacceptable/abnormal data from a running average improves the overall quality of the statistical/historical reference/threshold from which future data will be compared by providing a reference which is closer to an tolerable/acceptable value.

In regards to claims 2, Rakib in view of Domino teach the corrector is arranged to set to zero  $n$  consecutive ones of the samples after each of the samples whose amplitude is greater than said threshold, where  $n$  is a positive integer" (Rakib – col. 8, line 62 – col. 9, line 2; in which Rakib's system is **arranged** to erase, i.e., set to zero, additional samples adjacent/after the bin/sample containing the interference, so spilled out interference is removed from adjacent bins/samples; col. 4, lines 43–48; in which samples are also delayed in time for excision of interference from the consecutive samples at any time).

In regards to claims 3, Rakib in view of Domino teach the corrector is arranged to set to zero  $m$  consecutive ones of the amplitude samples before each of the amplitude samples whose amplitude is greater than the threshold, where  $m$  is a positive integer (Rakib – col. 8, line 62 – col. 9, line 2; in which Rakib's system is **arranged** to erase, i.e., set to zero, samples adjacent/before the bin/samples containing interference, so spilled out interference is removed from adjacent bins/samples).

Regarding claim 4, Rakib in view of Domino disclose the further limitation the average is a moving average (col. 6, lines 21-25; in which Rakib discloses an adaptive, i.e., moving, average calculating process).

Regarding claim 7, Rakib in view of Domino teach the input section comprises a zero intermediate frequency converter (Rakib - col. 4, lines 32-34; in which Rakib's down converter converts the signal to baseband).

Regarding claim 9, Rakib in view of Domino teach the input section comprises an analogue/digital converter for forming the amplitude samples as digital samples (Rakib - col. 4, lines 34-36; ADC 16 – fig. 1).

Regarding claim 11, Rakib in view of Domino teach a fast Fourier transformer for processing the amplitude samples from the corrector (Rakib - col. 9, 38-43; in which Rakib discloses use of the FFT for a simpler detection/cancellation algorithm and reduced performance requirements of the processor).

Regarding claim 12, the following limitations read on Rakib in further view of Domino:

a tuner comprising an input section for converting a radio frequency signal to a sequence in time of amplitude samples (col. 4, lines 20-36; fig. 1 item 10; in which Rakib's receiver unit (RU) is a "tuner" for receiving cable TV media through network



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channels; col. 4, lines 34-38, 43-48 & ADC 16 – fig. 1 in which “a sequence in time of amplitude samples” reads on the ADC samples taken when converting the analog signal amplitudes to digital signals for further digital processing);

a threshold generator for generating a threshold as a first function of an average of amplitudes of a plurality of samples of the amplitude samples (col. 5, line 60-col.6, line 25; in which Rakib's detection and cancellation circuit – 36, fig. 2- generates an adaptable threshold based on the amplitude of the samples in their respective frequency bands);

a comparator for comparing the amplitude of each of the amplitude samples with the threshold (col. 6, lines 5-10; in which Rakib's detection and cancellation circuit 36 compares the amplitude of the samples to the threshold); and

a corrector responsive to the comparator for setting to zero each of the amplitude samples whose amplitude is greater than the threshold (col. 5, lines 47-58; col. 5, line 67-col. 6, line 2; col. 7, lines 1-16 & fig. 3; in which Rakib's detection and cancellation circuit 36 sets frequency bins, i.e., the amplitude of frequency groups/bands generated by the filter bank with amplitudes above the threshold, to zero);

Rakib further discloses the average signal amplitude of a frequency bin containing an interference signal is higher than averages generated from **other** bins, which don't have an interfering signal (col. 7, lines 55-65) and that the threshold should exceed an acceptable variance of the amplitude (col. 7, lines 49-55).

However, Rakib fails to disclose the excluding from the average any of the amplitude samples whose amplitude exceeds the threshold.

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In an analogous art, Domino discloses a system in an RF receiver that discards extremely high external, i.e., above a threshold, interference signals from a running average of signal values, so that the erroneous signal does not abruptly change the running average (col. 7, lines 9-21).

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify Rakib's system to include excluding from the average any of the amplitude samples whose amplitude exceeds the threshold as taught by Domino, so that a better running average of signal amplitudes could be used to generate the threshold, i.e., the running average would not be corrupted by extremely high interference signals (Domino – col. 7, lines 15-16; Rakib – col. 7, lines 53-55). Furthermore, one of ordinary skill in the art would have know that eliminating unacceptable/abnormal data from a running average improves the overall quality of the statistical/historical reference/threshold from which future data will be compared by providing a reference which is closer to an tolerable/acceptable value.

Regarding the further limitation “set top box” Rakib in view of Domino fail to specifically disclose it. However, the examiner takes official notice that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Rakib's receiver unit to include a set top box for improving reception and decreasing susceptibility due to errors in the signal caused by local electromagnetic interference (e.g. noise impulse signals entering the set-top box from the switching on/off of a high power stereo amplifier near the STB).

Regarding claim 13, the following limitations read on Rakib in further view of Domino:

a television receiver comprising a tuner comprising an input section for converting a radio frequency signal to a sequence in time of amplitude samples (col. 4, lines 20-36; fig. 1 item 10; in which Rakib's receiver unit (RU) is a "tuner" for receiving cable TV media through network channels; col. 4, lines 34-38, 43-48 & ADC 16 – fig. 1 in which "a sequence in time of amplitude samples" reads on the ADC samples taken when converting the analog signal amplitudes to digital signals for further digital processing);

a threshold generator for generating a threshold as a first function of an average of amplitudes of a plurality of samples of the amplitude samples (col. 5, line 60-col.6, line 25; in which Rakib's detection and cancellation circuit – 36, fig. 2- generates an adaptable threshold based on the amplitude of the samples in their respective frequency bands);

a comparator for comparing the amplitude of each of the amplitude samples with the threshold" (col. 6, lines 5-10; in which Rakib's detection and cancellation circuit 36 compares the amplitude of the samples to the threshold);

a corrector responsive to the comparator for setting to zero each of the amplitude samples whose amplitude is greater than the threshold (col. 5, lines 47-58; col. 5, line 67-col. 6, line 2; col. 7, lines 1-16 & fig. 3; in which Rakib's detection and cancellation circuit 36 sets frequency bins, i.e., the amplitude of frequency groups/bands generated by the filter bank with amplitudes above the threshold, to zero);

Rakib further discloses the average signal amplitude of a frequency bin containing an interference signal is higher than averages generated from **other** bins, which don't have an interfering signal (col. 7, lines 55-65) and that the threshold should exceed an acceptable variance of the amplitude (col. 7, lines 49-55).

However, Rakib fails to disclose the excluding from the average any of the amplitude samples whose amplitude exceeds the threshold.

In an analogous art Domino discloses a system in an RF receiver that discards extremely high external interference, i.e., above a threshold, signals from a running average of signal values, so that the erroneous signal does not abruptly change the running average (col. 7, lines 9-21).

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify Rakib's system to include excluding from the average any of the amplitude samples whose amplitude exceeds the threshold as taught by Domino, so that a better running average of signal amplitudes could be used to generate the threshold, i.e., the running average would not be corrupted by extremely high interference signals (Domino – col. 7, lines 15-16; Rakib – col. 7, lines 53-55). Furthermore, one of ordinary skill in the art would have know that eliminating unacceptable/abnormal data from a running average improves the overall quality of the statistical/historical reference/threshold from which future data will be compared by providing a reference which is closer to an tolerable/acceptable value.

Regarding claim 14, the following limitations read on Rakib in view of Domino:

a tuner comprising an input section for converting a radio frequency signal to a sequence in time of amplitude samples (col. 4, lines 20-36; fig. 1 item 10; in which Rakib's receiver unit (RU) is a "tuner" for receiving cable TV media through network channels; col. 4, lines 34-38, 43-48 & ADC 16 – fig. 1 in which "a sequence in time of amplitude samples" reads on the ADC samples taken when converting the analog signal amplitudes to digital signals for further digital processing);

a threshold generator for generating a threshold as a first function of an average of amplitudes of a plurality of samples of the amplitude (col. 5, line 60-col.6, line 25; in which Rakib's detection and cancellation circuit – 36, fig. 2- generates an adaptable threshold based on the amplitude of the samples in their respective frequency bands);

a comparator for comparing the amplitude of each of the amplitude samples with the threshold (col. 6, lines 5-10; in which Rakib's detection and cancellation circuit 36 compares the amplitude of the samples to the threshold);

a corrector responsive to the comparator for setting to zero each of the amplitude samples whose amplitude is greater than the threshold (col. 5, lines 47-58; col. 7, lines 1-16 & fig. 3; in which Rakib's detection and cancellation circuit 36 sets frequency bins, i.e., the amplitude of frequency groups/bands generated by the filter bank with amplitudes above the threshold, to zero);

Rakib further discloses the average signal amplitude of a frequency bin containing an interference signal is higher than averages generated from **other** bins, which don't have an interfering signal (col. 7, lines 55-65) and that the threshold should exceed an acceptable variance of the amplitude (col. 7, lines 49-55).

However, Rakib fails to disclose the limitation excluding from the average any of the samples whose amplitude exceeds the threshold.

In an analogous art Domino discloses a system in an RF receiver that discards extremely high external interference, i.e., above a threshold, signals from a running average of signal values, so that the erroneous signal does not abruptly change the running average (col. 7, lines 9-21).

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify Rakib's system to include excluding from the average any of the amplitude samples whose amplitude exceeds the threshold as taught by Domino, so that a better running average of signal amplitudes could be used to generate the threshold, i.e., the running average would not be corrupted by extremely high interference signals (Domino – col. 7, lines 15-16; Rakib – col. 7, lines 53-55). Furthermore, one of ordinary skill in the art would have know that eliminating unacceptable/abnormal data from a running average improves the overall quality of the statistical/historical reference/threshold from which future data will be compared by providing a reference which is closer to an tolerable/acceptable value.

Regarding the further limitation “television signal recorder” Rakib in view of Domino fail to specifically disclose it. However, the examiner takes official notice that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Rakib's receiver unit to include a VCR with tuning capability (as is well known in the art) for improving reception and decreasing susceptibility due to errors in the signal caused by local electromagnetic interference (e.g. noise impulse signals

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entering the VCR from the switching on/off of a high power stereo amplifier near the STB).

3. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rakib et al. (US 6,426,983 B1) in view of Domino et al. (US 6,259,752 B1) and in further view of Staudinger et al. (US 6,407,634 B1).

Regarding claim 5, Rakib in view of Domino disclose a threshold that exceeds the calculated average by some predetermined amount (Rakib- col. 5 line 65 – col. 6, line 9; col. 7, lines 21-31) and that the threshold should exceed an acceptable variance of the amplitude (col. 7, lines 49-55).

However, Rakib in view of Domino fail to disclose greater than a product of the average and a peak-to-average ratio of the amplitude samples.

In an analogous art, Staudinger discloses a mathematical measurement of error, i.e., distortion/interference, in a sampled signal ( $V_{out}(t)$ , fig. 1) is proportional to the product of the samples signal average ( $E_{out}(t)_{ave}$ ) and the peak to time average value of the signal ( $H_D$ ) (col. 4, line 64 – col. 5, line 8).

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the system of Rakib in view of Domino to include the greater than a product of the average and a peak-to-average ratio of the amplitude samples as taught by Staudinger because it is well known that there is a mathematical relationship between the known/acceptable peak-to-average ratio of a signal and the

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average amplitude of the received/instant signal, which indicates with a higher degree of probability that amplitude samples above the threshold/or acceptable peak value would be caused by unacceptable levels of interference, which provides a more reliable indication of the presence of interference (Rakib - col. 7, lines 51-55).

4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rakib et al. (US 6,426,983 B1) in view of Domino et al. (US 6,259,752 B1) and in further view of Ma et al. (US 6,292,054 B1).

Regarding claim 6, Rakib in view of Domino disclose a threshold that exceeds the calculated average by some predetermined amount (col. 5 line 65 – col. 6, line 9).

However, Rakib in view of Domino fail to disclose the “threshold is greater than three times said average”.

In an analogous art Ma discloses a typical peak-to-average ratio for a CDMA standard transmission is 9.6 dB with a peaking probability of  $10^{-4}$ , i.e., one in 10,000 peaks exceeds a certain threshold above average power (col. 3, lines 44-50, fig. 1 – item 14). Furthermore a peak-to-average ratio of 9.6 dB correlates to a maximum peak value of closely 3.02 times the average, i.e.,  $PEAK = 3.02 \cdot MEAN$ , from the formula for converting the ratio of field strength values to decibels, e.g.,  $ratio_{dB} = 20 \log_{10}(value_1/value_0) \rightarrow ratio_{dB}/20 = \log_{10}(value_1/value_0) \rightarrow value_1/value_0 = 10^{(ratio_{dB}/20)} \rightarrow value_1 = value_0 \cdot 10^{(ratio_{dB}/20)}$ . Substituting 9.6 dB (the peak-to-average ratio) for  $ratio_{dB}$  in this formula yields  $3.02 \cdot MEAN = PEAK$ .



It would have been obvious to one skilled in the art at the time of the invention to modify the system of Rakib in view of Domino to include the limitation "threshold is greater than three times said average" as taught by Ma, so that the probability of the system suppressing interference signals and not payload data is higher (Ma - col. 3, lines 44-50, fig. 1 – item 14).

5. Claims 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rakib et al. (US 6,426,983 B1) in view of Domino et al. (US 6,259,752 B1) and in further view of Pulley et al. (US 6,754,292, B1).

Regarding claim 8, Rakib in view of Domino disclose digital communication in any digital communication systems with strong interfering signal (Rakib- col. 4, lines 9-12).

However Rakib in view of Domino fail to specifically disclose the input section has in-phase and quadrature outputs for supplying the amplitude samples.

In an analogous art Pulley discloses a digital TV receiver/tuner with ADC that produces in-phase (I) and quadrature (Q) samples for decoding a DVB-T standard signal (col. 2, lines 1-13).

It would have been obvious to one of ordinary skilled in the art at the time of the applicant's invention to modify the system of Rakib in view of Domino to include the input section has in-phase and quadrature outputs for supplying the amplitude samples as taught by Pulley for the advantage of providing better quality of service to customers

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with equipment for decoding and processing DVB-T standard television signals (col.2, lines 1-6) and furthermore it would have been well known to one skilled in the art that commercial quadrature signal processing components (e.g. hardware/software) are readily available.

Regarding claim 10, Rakib in view of Domino disclose digital communication in any digital communication system with strong interfering signals (col. 4, lines 9-12).

However Rakib in view of Domino fail to specifically disclose a COFDM demodulator.

In an analogous art Pulley discloses a digital TV receiver/tuner receives DVB-T standard signals, which utilize the COFDM modulating technique (col. 2, lines 1-13).

It would have been obvious to one skilled in the art at the time the invention was made to modify the system of Rakib and Domino to include a COFDM demodulator as taught by Pulley for the advantage of providing better quality of service to customers with equipment for receiving and decoding DVB-T standard television signals (col.2, lines 1-6) and furthermore it is well known that signals transmitted using the COFDM technique resist different types of distortion/interference (e.g., multipath, burst noise, etc.) well.

### ***Conclusion***

2. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Clyde H. Jones III whose telephone number is 571-272-5946. The examiner can normally be reached on 9-5:30 p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Grant can be reached on 571-272-7294. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

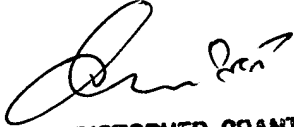
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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

***Note to Applicant***

Art Units 2611, 2614 and 2617 have changed to 2623. Please make all future correspondence indicate the new designation 2623.

CJ

  
**CHRISTOPHER GRANT  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800**